

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF) James Alexander Sharpe
SERIAL NO.:) 10/522,924
FILED:) September 26, 2005
FOR:) OPTICAL PROJECTION TOMOGRAPHY
CUSTOMER NUMBER) 23644
CONFIRMATION NO.) 6623
ART UNIT:) 2872
EXAMINER:) Thong Q. Nguyen
ATTORNEY DOCKET NO.) 920602-97830

RESPONSE TO FINAL OFFICE ACTION DATED DECEMBER 30, 2010

Honorable Director of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Examiner's further and final Office Action of December 30, 2010, it is requested that the application be amended as follows:

In the Claims

1. (currently amended) Apparatus for obtaining an image of a specimen by optical projection tomography, the apparatus comprising light scanning means, a rotary stage for rotating the specimen to be imaged, an optical system and a localized light detector, wherein light from the scanning means scans the specimen and the optical system is operative to direct onto only the localized light detector [[,]] throughout scanning movement of the light, ~~to direct onto the detector only that~~ light which exits or by-passes the specimen parallel to a beam incident on the specimen, thereby to allow a higher signal-to-noise ratio by limiting detection of scattered light at the localized light detector.
2. (previously presented) Apparatus according to claim 1, wherein the optical system is constituted by a convex lens which causes convergence of light incident thereon and directs onto the detector the light which exits or by-passes the specimen parallel to the beam incident on the specimen.
3. (cancelled)
4. (previously presented) Apparatus according to claim 1, wherein the localized detector is one detector of a linear array of detectors, the other detectors of the array constituting auxiliary detectors which detect scattered and/or refracted light.
5. (previously presented) Apparatus according to claim 1, wherein the localized detector is one detector of a two-dimensional array of detectors, the other detectors of the array constituting auxiliary detectors which detect scattered and/or refracted light.
6. (previously presented) Apparatus according to claim 1, wherein the rotary stage rotates the specimen to indexed positions in each of which the specimen is in use subjected to a scanning movement of incident light by the scanning means.

7. (original) Apparatus according to claim 6, wherein the scanning means is operative to scan the light in a raster pattern, one complete raster scan being undertaken at each indexed position of the specimen.
8. (previously presented) Apparatus according to claim 1, wherein the light scanning means is part of a confocal scanning microscope.
9. (previously presented) An optical system for use in apparatus for obtaining an image in optical projection tomography, the optical system receiving light from a specimen scanned by a light beam and being operative to direct onto a detector only light which exits or bypasses the specimen parallel to a beam incident on the specimen.

10-12. (cancelled)

Remarks

Reconsideration of the application is requested in view of the amendments above and comments which follow. In the above amendments, claim 3 has been cancelled and the subject matter thereof has been incorporated into claim 1, which has also been further amended. The remaining claims have not been altered. The Examiner's comments in numbered section 4 on page 2 of the Office Action have been noted, and the error in the previous amendment is regretted.

In the Office Action, the Examiner has rejected claims 1-4, 6-7 and 9 under 35 U.S.C. § 102(b) as being anticipated by Tsutomu et al., and the remaining claims have been rejected on the basis of obviousness. Reconsider is requested.

Tsutomu does not have a localized light detector which is the only detector which receives the light exiting or bypassing the specimen parallel to the incident beam throughout the scanning movement of the light. In the present invention, throughout the scan, only the localized detector receives the parallel light. This is very different from the arrangement in Tsutomu, where each detector in the circular array acts as a detector to receive parallel light at different points throughout the scan. Thus in Tsutomu, at one point in the scan a first detector will receive the parallel light, then as the scan proceeds successive detectors receive the parallel light, i.e. the second detector, then the third detector and so on. In the present invention, only one detector, the localized detector, receives the parallel light at all times throughout the scan, which is very different.

The arrangement of the present invention is a much simpler arrangement. By having a localized detector that is the only detector that receives the parallel light, subsequent signal processing can be simplified as one knows that the parallel light received at the localized detector is substantially free from any scattering or refracted light. This means that the arrangement of the present invention has a much higher signal-to-noise ratio as the detection of scattered light is limited.

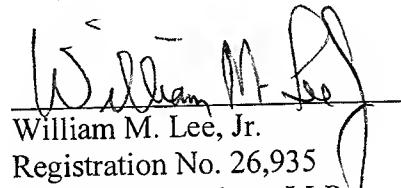
In Tsutomu, as the scan occurs each detector receives parallel light at some points during the scan and scattered/refracted light at other points during the scan. To identify the parallel light that has not been scattered or refracted requires complicated signal processing of the output of each detector, which is a much more complex arrangement.

The present arrangement is thus more straightforward and at all times throughout the scan, the localized light detector is the only detector receiving the parallel light. There is nothing in Tsutomu that would teach a person skilled in the art that having the simplified arrangement would be of advantage, but the inventor has realized that the simpler system achieves immediate advantages with improving the signal-to-noise ratio.

It is therefore submitted that the claims distinguish from Tsutomu, and are allowable thereover. The Examiner's further and favorable reconsideration of the application is therefore urged.

February 16, 2011

Respectfully submitted,



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